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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,718

04/05/2006

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HIP0008US

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23413 7590 05/27/2010  
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EXAMINER

SZEWCZYK, CYNTHIA

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

05/27/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 13, 15, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by SCHWARTZWALDER et al. (US 3,090,094).

SCHWARTZWALDER teaches a method of making porous ceramic articles by impregnating a polymer sponge with a ceramic slurry (col. 3 lines 38-39), dewatering the sponge by removing excess ceramic slurry (col. 3 line 44), and drying the coated sponge (col. 3 lines 44-45) wherein the drying step may be considered a curing step and the product before firing maintains still has the polymer foam in place and is therefore a porous composite.

Regarding claim 15, SCHWARTZWALDER teaches that the ceramic solution comprises sodium silicate (col. 1 line 40).

Regarding claim 20, SCHWARTZWALDER teaches that the ceramic solution comprises phosphoric acid (col. 1 line 40).

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 14, 16, 19, 21-24, 27, 28, 30-33, 36, 37, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over SCHWARTZWALDER et al. (US 3,090,094) in view of BHADURI (Science and Technology of Ceramic Foams).

SCHWARTZWALDER teaches a method of making porous ceramic articles. SCHWARTZWALDER is silent to performing the process steps multiple times.

BHADURI teaches a method of making ceramic foams wherein the polymer sponge is impregnated by a ceramic solution and then dried by heating (figure 9), wherein the drying step may be considered a curing step as well. BHADURI discloses that the process is repeated as many times as necessary (figure 9). It would have been obvious to one of ordinary skill in the art that the steps in the process of SCHWARTZWALDER could have been repeated as in BHADURI because BHADURI discloses that the process is based on the process disclosed in SCHWARTZWALDER (p. 216, para. 5).

Regarding claim 16, BHADURI teaches that the ceramic slurry may comprise a defoamer (p. 218, para. 1), which is a surfactant.

Regarding claim 19, BHADURI teaches using flocculating agents (p. 218 para. 1), which are water repellants.

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Regarding claim 21, BHADURI discloses adding an air setting agent (p. 218, para. 1), which is a curing agent, to the structure. It would have been obvious to one of ordinary skill in the art to add the air setting agent after the dewatering step, so that the air setting agent is not squeezed out of the composite with the excess slurry.

Regarding claim 22, see the discussion of claim 14.

Regarding claim 23, SCHWARTZWALDER teaches that the ceramic solution comprises sodium silicate (col. 1 line 40).

Regarding claim 24, see the discussion of claim 16.

Regarding claim 27, see the discussion of claim 19.

Regarding claim 28, SCHWARTZWALDER teaches that the ceramic solution comprises phosphoric acid (col. 1 line 40).

Regarding claim 30, BHADURI is silent as to the state of the air setting agent, however, it would have been obvious to one of ordinary skill in the art that only a limited list of possibilities exist for the state of the air setting agent: gaseous, solid, and liquid, therefore it would have been obvious to one of ordinary skill that the air setting agent may have been solid or liquid.

Regarding claim 31, see the discussion of claim 14.

Regarding claim 32, see the discussion of claim 23.

Regarding claim 33, see the discussion of claim 16.

Regarding claim 36, see the discussion of claim 19.

Regarding claim 37, see the discussion of claim 28.

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Regarding claim 39, modified SCHWARTZWALDER teaches that the product before firing is a composite of polymer sponge and ceramic slurry solution, since both products undergo that same process of formation, it is determined that the composites are identical.

Regarding claim 40, see the discussion of claim 21.

5. Claims 18, 26, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over SCHWARTZWALDER et al. (US 3,090,094) in view of BHADURI (Science and Technology of Ceramic Foams) as applied to claims 14, 16, 19, 21-24, 27, 28, 30-33, 36, 37, 39, and 40 above, and further in view of GILL (Environmentally Safe Binders for Agglomeration).

SCHWARTZWALDER as modified by BHADURI teaches a method for preparing a ceramic body. Modified SCHWARTZWALDER is silent as to other options for the ceramic solution.

GILL teaches additives that may be safely added to sodium silicate binders, which are used in the ceramic solution of modified SCHWARTZWALDER. GILL discloses that the silicate binder may include a number of setting agents (table 2) including sodium silicofluoride. It would have been obvious to one of ordinary skill in the art to add sodium silicofluoride to the ceramic solution of modified SCHWARTZWALDER because GILL discloses that the setting agents help create a stronger bond in the sodium silicate agglomerate (Agglomeration with Silicates).

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6. Claims 13, 16, 17, 21, 24, 25, 30, 33, 34, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over CHU et al. (Hydroxyapatite implants with designed internal architecture).

CHU teaches a method for preparing a ceramic body wherein the method comprises an impregnation step of an inorganic adhesive solution into a porous structure (fig 1. Suspension casting) and drying the coated porous structure by curing (fig. 1 Suspension curing). CHU is silent to partially removing some of the inorganic adhesive solution in a dewatering step, however, it would have been obvious to one of ordinary skill in the art that the inorganic adhesive of CHU would have been partially removed CHU discloses that the solution flows easily (section 3.2) which would indicate that the solution may have exited the porous structure unintentionally.

Regarding claim 16, CHU discloses that the solution comprises a dispersant (p. 472 section 2.2), which acts as a surfactant.

Regarding claim 17, CHU discloses that the composition includes an acrylic binder (p. 472 section 1) which is an organic adhesive.

Regarding claim 21, CHU discloses using benzoyl peroxide as a curing agent (p. 473, section 2.2).

Regarding claim 24, see the discussion of claim 16.

Regarding claim 25, see the discussion of claim 17.

Regarding claim 30, see the discussion of claim 21.

Regarding claim 33, see the discussion of claim 16.

Regarding claim 34, see the discussion of claim 17.

Regarding claim 39, CHU discloses that the product before sintering is a composite of polymer sponge and inorganic adhesive solution, since both products undergo that same process of formation, it is determined that the composites are identical.

Regarding claim 40, see the discussion of claim 21.

7. Claims 15, 20, 23, 28, 32, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over CHU et al. (Hydroxyapatite implants with designed internal architecture) as applied to claims 13, 16, 17, 21, 24, 25, 30, 33, 34, 39, and 40 above, and further in view of BORTZ et al. (US 3,662,405).

CHU teaches a method for preparing a ceramic body. CHU is silent as to other options for the ceramic solution.

BORTZ discloses that ceramic solutions for bone implant material often include binders such as sodium silicate, phosphoric acid, and aluminum phosphate (col. 3 lines 24-30). It would have been obvious to one of ordinary skill in the art to substitute such binders in the ceramic solution of CHU because CHU discloses that binders are necessary in the composition and BORTZ discloses that these are appropriate for use manufacture of bone implants.

8. Claims 18, 26, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over CHU et al. (Hydroxyapatite implants with designed internal architecture) as applied to claims 13, 16, 17, 21, 24, 25, 30, 33, 34, 39, and 40

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above, and further in view of GILL (Environmentally Safe Binders for Agglomeration).

CHU teaches a method for preparing a ceramic body. CHU is silent as to other options for the ceramic solution.

GILL teaches additives that may be safely added to sodium silicate binders, which are used in the ceramic solution of CHU. GILL discloses that the silicate binder may include a number of setting agents (table 2) including sodium silicofluoride. It would have been obvious to one of ordinary skill in the art to add sodium silicofluoride to the ceramic solution of CHU because GILL discloses that the setting agents help create a stronger bond in the sodium silicate agglomerate (Agglomeration with Silicates).

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

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action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CYNTHIA SZEWCZYK whose telephone number is (571)270-5130. The examiner can normally be reached on Monday through Thursday 7:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Jason L Lazorcik/  
Primary Examiner, Art Unit 1791

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